QuakeSim: Multi-Source Synergistic Data Intensive Computing for Earth Science

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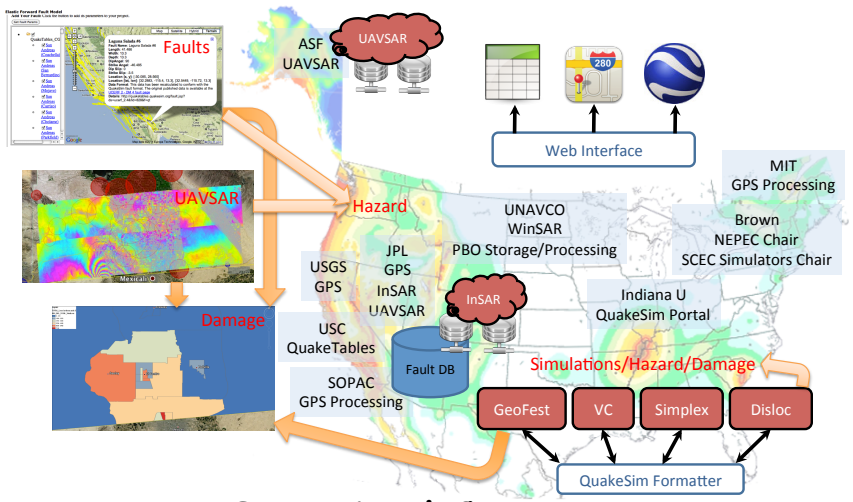
Objective

- Update QuakeSim services to integrate and rapidly fuse data from multiple sources to support comprehensive efforts in data mining, analysis, simulation, and forecasting for earthquakes.
- Extend QuakeSim infrastructure to include tiered publishing mechanisms and data provenance, trust, and history tracking.
- Develop and deploy a cloud computing architecture to access and analyze large and heterogeneous data products and integrate them with earthquake models and simulations in collaboration with the NASA Earth Science Division - Earth Surface and Interior focus area.



Operational Concept

Approach

- Integrate multi-source data from NASA, USGS, NSF and others through bridging services.
- Support fault model optimization by integrating multiple data types in a Cloud Computing framework.
- Integrate model contribution, provenance, version tracking, commenting, and rating of fault models produced by the optimization framework.

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Key Milestones

• Update fault models with change notification service	12/12
• Implement data provenance, trust and history tracking	05/13
• Complete statistical algorithms and tools for simulated and real data	05/13
• Implement Cloud architecture leveraging NASA CMAC radar processing capability	09/13
• Deploy publishing mechanism for trusted sources	01/14
• Integrate high data rate and multi-source GPS time series analysis	06/14
• Demonstrate pattern analysis of fused and cross-correlated data	11/14
• Complete earthquake cloud computing system	06/15

$TRL_{in} = 2$ $TRL_{current} = 4$

ESTO Earth Science Technology Office